The Insuleak™ system redefines cable’s insulation test standards. It was designed by Hydro-Quebec to prevent major failures in power distribution cables. The Insuleak™ uses a unique process of air injection in the cable’s core, and pressure monitoring for a determined period of time. The Insuleak™ is a great innovation for detection insulations flaws in low voltage insulated cables.

**ADVANTAGES**

- Detects the presence of very small holes in the cable’s insulating material (1mm)
- Compatible with cables up to 200m in length
- Test duration is only few minutes, depending on the cable’s diameter and length
- Results are unaffected by ambient temperature and air humidity
- The test does not alter the dielectric properties of the cable’s insulating material at the test pressure of ~500 kPa (~70 psi)

**PREVENTION IS KEY**

Low voltage cable installation can damage the cable’s insulating material. Since the cables are pulled in the underground ducks, it is not possible to visually inspect their condition after the installation. If the cable’s insulating material was damaged while performing this process, it may degrade rapidly, create electrical arcs, and even explode in certain conditions.

**OPERATION**

The test method consist of injecting air pressure in the core of the low voltage cable. The air pressure is then monitored to detect any fluctuation. The presence of insulation failure is detected when the air pressure cannot be contained in the cable for the determined period of time.

Numerous tests were done at Hydro-Quebec’s laboratory to develop a test method. This method is able to meet the performance requirements specified for implementation on Hydro-Quebec’s distribution network. Several variants were assessed on the optimal way of injecting air into the cable and the effectiveness of detecting a small leak. The tests were conducted with different types of calibrated faults that were simulated by perforating the layer of electrical insulation up to the cable core following this process, three variants of the new method for verifying LV cable insulation were selected.
**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Batteries</th>
<th>12.8 VDC, 6.6Ah, Li-Ion, Rechargeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>8 hour</td>
</tr>
<tr>
<td>Input pressure</td>
<td>Min: 70 PSI and Max: 90 PSI</td>
</tr>
<tr>
<td>Output pressure</td>
<td>67.5 PSI (regulated)</td>
</tr>
<tr>
<td>Cable size</td>
<td>from 2 AWG to 1000 KCMIL</td>
</tr>
<tr>
<td>Lenght of cable</td>
<td>Up to 200 m</td>
</tr>
<tr>
<td>Communication port</td>
<td>RS-232 and USB</td>
</tr>
</tbody>
</table>

**Dimensions (W x D x H)**

- Instrument only: 40 x 33 x 18 cm (16 x 13 x 7 inches)
- Complete kit: 69 cm x 51 x 23 cm (27 x 20 x 9 inches)

**Weight**

- Instrument only: 7.8 kg (17.5 lbs)
- Complete kit: 20.6 kg (45.5 lbs)

**STANDARD ACCESSORIES:**

- Transportation case
- The instrument
- All rubber hoses with tips for connecting cables
- Battery charger
- Screw driver for clamp
- Clamp
- Drill adapter
- User Manual

**Laboratory tests**

<table>
<thead>
<tr>
<th>Fault</th>
<th>No fault</th>
<th>Peak</th>
<th>0.5 mm hole</th>
<th>1 mm hole</th>
<th>1.5 mm hole</th>
<th>2 mm hole</th>
<th>6-12 mm cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total - type of fault</td>
<td>57</td>
<td>51</td>
<td>21</td>
<td>60</td>
<td>15</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>Total - tests</td>
<td>269</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ndb Technologies inc.** • 1405 St-Jean-Baptiste, office 111 • Quebec (QC) G2E 5K2 - Canada • Tel: 1(418)877-7701 Fax: 1(418)877-7787 Email: mkt@ndbtech.com

www.ndbtech.com